Space Weather Forecast

Issued on Thursday 20 March 2025 at 13:07 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of isolated Moderate class flares. Chance of G1-G2/Minor-Moderate Storms throughout, due to coronal mass ejection arrivals, and later faster solar winds.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with one Moderate-class flare observed at 19/2040 UTC from a sunspot region in the northwest. There are currently ten sunspot regions on the visible disc. Two regions, one in the northwest and the other near centre-west disc, are the two largest and more magnetically complex regions on the disc. Most other regions appear to be relatively small, simple or in decay.

No Earth-directed Coronal Mass Ejections (CME) were observed.

Solar Wind / Geomagnetic Activity: Solar winds were at elevated to slightly elevated levels, falling from 520km/s to around 430 km/s. The interplanetary magnetic field was weak, with the north-south component also weak, favouring a negative (southward) orientation at first. Geomagnetic activity was Quiet to Active (Kp1-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with an ongoing chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: There are four CMEs which feature in the forecast in the coming days (20-22 Mar). Solar winds are likely to remain mostly at slow to slightly elevated levels, with elevated enhancements possible due to forecast CME arrivals. Quiet to Active activity expected initially, with a chance of G1-G2/Minor-Moderate storms Days 1-3 (20-22 Mar) should any of the four possible CMEs arrive and/or combine. A further enhancement is possible on Day 4 (23 Mar) due to a fast wind from a coronal hole, which is currently near centre-disc.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger flares.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	30	30	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	40	40	40	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.